# TRAFFIC FATALITIES' HEAVY TOLL - CAUSES AND PREVENTION



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Traffic fatalities, a major cause of deaths and injuries, do not receive the amount of attention and careful analysis they deserve. In the U.S. in 2009, there were 33,808 traffic fatalities and an estimated 2,217,000 people injured in motor vehicle crashes. Worldwide, the annual number of traffic fatalities has risen to an estimated 1.2 million. Traffic fatalities rank as the leading cause of death for U.S. teenagers and one of the leading causes of deaths and injuries for all Americans.

Despite these disturbing facts, television, radio, newspapers and Internet news sources tend to report traffic deaths in a routine, matter-of-fact manner, as though implying "these things happen." The huge annual traffic mortality totals hardly elicit a stir, much less a call to action from the public, the news media or the government. It is as though the annual trafficrelated death toll was regarded as inevitable, similar to dying of old age or acts of nature. The great pity is that a large percentage of traffic deaths are easily preventable, but a lack of urgency, priority and initiative condemns many thousands to die needlessly each year.

To better understand and deal with the major problem of traffic fatalities, one must separate and analyze the types and causes of the accidents responsible for these mortalities. Important statistics to begin with are the numbers of people killed and injured on U.S. roads in 2008 and 2009 by type of accident and vehicle. See Table 1 (next page).

Major contributing factors or causes of 2009's 2,250,808 U.S. traffic deaths and injuries include:

- Driving/riding without using a seat belt
- Alcohol- and drug-impaired driving
- Distracted driving
- Driver fatigue
- Age-related accidents

**Executive Summary** According to the World Health Organization, "traffic fatalities attract less mass media attention than less frequent types of tragedy." This is in spite of the fact that traffic fatalities and injuries continue to take a huge toll in the U.S. and are rapidly surging worldwide, which has turned them into a leading cause of death internationally. This article will attempt to explain the reasons for this growing peril, consider ways of significantly reducing it and focus attention on this important problem confronting us all.

- Motorcycle accidents
- Speeding/aggressive driving
- Adverse weather conditions

• Poorly maintained/designed roads and bridges Let us examine each of these factors individually.

## Driving Under the Influence

Alcohol-impaired driving remains the single greatest cause of traffic deaths. Alcohol-impaired is defined as a driving with a blood alcohol concentration of .08 grams or more per deciliter. Such drivers were involved in 32% of 2009's traffic fatalities.

Drugs are another major cause of traffic fatalities. Of all drivers killed on U.S. roads in 2009, about 18% tested positively for drugs at the time of death, up from 13% in 2005. Among the drugs being found are narcotics, depressants, stimulants, hallucinogens, cannabis, phencyclidines (PCPs), anabolic steroids and inhalants. The test results include both illicit and legally prescribed drugs as well as over-the-counter medicines.

### **Distracted Driving**

According to the National Highway Traffic Safety Administration (NHTSA), distracted driving led to

#### Occupants and Nonoccupants Killed and Injured in Traffic Crashes

and the second se	Killed				Injured			
Description	2008	2009	Change	% Change	2008	2009	Change	% Change
Total*	37,423	33,808	-3,615	-9.7%	2,346,000	2,217,000	-129,000	-5.5%
Occupants								
Passenger Vehicles	25,462	23,382	-2,080	-8.2%	2,072,000	1,976,000	-96,000	-4.6%
Passenger Cars	14,646	13,095	-1,551	-11%	1,304,000	1,216,000	-88,000	-6.7%
Light Trucks	10,816	10,287	-529	-4.9%	768,000	759,000	-9,000	-1.2%
Large Trucks	682	503	-179	-26%	23,000	17,000	-6,000	-26%
Motorcycles	5,312	4,462	-850	-16%	96,000	90,000	-6,000	-6.3%
Non-occupants								
Pedestrians	4,414	4,092	-322	-7.3%	69,000	59,000	-10,000	-14%
Pedalcyclists	718	630	-88	-12%	52,000	51,000	-1,000	-1.9%
Other/Unknown	188	150	-38		9,000	7,000	-2,000	

Source: Fatalities - FARS 2008 (Final), 2009 (ARF), Injured - NASS GES 2008, 2009 Annual Files

\* Total includes occupants of buses and other/unknown occupants not shown in table. Changes in injury estimates shown in **bold** are statistically significant.

NHTSA's National Center for Statistics and Analysis

Table 1

5,474 highway deaths and 448,000 accidents in 2009, which is 16% of the national total. Distractions can include adjusting the radio/CD player, looking at scenery, rubbernecking, having attention diverted by a passengers and children and, last but definitely not o least, talking or texting on cell (mobile) phones, which ta has been garnering the most publicity recently. Cell phone use while driving is blamed for 2,600 deaths, 330,000 injuries and \$43 billion in costs each year. Studies indicate that driving while talking on a cell S

phone quadruples the risk of a crash. Despite this fact, 81% of U.S. residents have reported using their cell phones while driving, and 11% of U.S. drivers are using them at any given moment.

Compared to other sources of driver distraction, "texting is in its own universe of risk," according to a study from the Virginia Tech Transportation Institute. The study observed drivers of long-haul trucks in their cabs, which were outfitted with video cameras, and found that when drivers texted, their collision risk was 23 times greater than when not texting. Just before a crash or near-crash, drivers spent nearly 5 seconds looking at their devices—enough time at highway speeds to cover more than the length of a football field.

Replying to a recent survey, 23% of all drivers said they read text messages while driving, and 16% send them while driving. The rate is higher for teenagers.

# Other Driving Hazards

Falling asleep while driving generates 1,550 deaths, 71,000 injuries and more than 100,000 accidents per year on average. These figures likely underestimate the fatigued driver problem, as at least 41% of drivers say they have driven while drowsy. The data relies on admissions from drivers who either may not know what caused their crash, or may know and do not

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want to admit to it.

Aggressive driving, which includes road rage, also accounts for many serious accidents. The dangers of aggressive driving include speeding, aggressive tailgating, disregarding traffic signals, frequent and/ or unsafe lane changes, rude gestures or verbal abuse directed at other drivers, and failure to yield.

Speeding is such a crucial part of driving risk that it is a factor in 30% of all fatal car crashes in the U.S. When a car's speed increases from 40 mph to 60 mph, its impact speed rises by 50%, while the energy that needs to be managed increases by 125%. Also, the faster a car is going when a crash happens, the harder it is to be protected by the car's airbags and seat belts and by roadside barricades, barrels and other crash cushions.

# Importance of Seat Belt Use

Another critical factor determining the total number of traffic deaths and injuries is use (or non-use) of driver and passenger seat belts. It is estimated that an average of 84% of U.S. drivers wore seat belts in 2009. Yet that same year, in 53% of all passenger vehicle fatalities, restraints were not used. That computes into a more than seven times greater chance of dying in a car accident for unrestrained occupants compared to restrained occupants. For each 1-2 percentage point increase in seat belt use, over a thousand lives could be saved annually, tens of thousands of injuries prevented and billions of dollars of expense avoided. See Table 2 (next page).

A driver's age can be a contributing risk factor in traffic accidents. On average, the most accident-prone drivers tend to be the youngest (16-24 years old) and the oldest (75 years and older). The graph provided illustrates this incidence. See Figure 1 (next page).

Passenger Vehicle Occupant Fatalities, by Restraint Use						
	2008	2009				

Туре	*	%	*	%	Change	% Change
Fatalities	25,462	100	23,382	100	-2,080	-8.2%
Restraint Used	11,527	45	10,950	47	-577	-5.0%
Restraint Not Used	13,935	55	12,432	53	-1,503	-11%

Source: FARS 2008 (Final), 2009 (ARF); Table 2

It is therefore not surprising that the leading cause of death for U.S. teenagers is motor vehicle fatalities. Measured by miles driven, teenagers are involved in three times as many fatal crashes as all other drivers. Any motorist can attest to the difficulties of driving in hazardous weather conditions. The perils of driving in heavy rain, hail, snow, ice, fog or high winds are easy to comprehend but difficult to quantify.

# Poor Condition of Roads and Bridges

In August 2007, the tragic I-35 bridge collapse in Minneapolis that killed 13 people briefly focused our attention on the U.S.'s decaying and poorly maintained roads and bridges. The American Society of Civil Engineers reported that in 2009, more than 26% of U.S. bridges (about 150,000) were either structurally deficient or functionally obsolete.

Poor road conditions not only cost motorists \$67 billion a year in repairs and operating costs, but also thousands of Americans their lives. One-third of America's major roads are in poor or mediocre condition, and 36% of major urban highways are congested. Americans spend 4.2 billion hours a year stuck in traffic at an economic cost of \$78.2 billion or \$710 per motorist.

Today, 47,000 miles of interstate highways are over



Figure 1

half a century old, and they look it. Meanwhile, the number of vehicles on the road has quadrupled since the American interstate highway system debuted. The U.S. faces a massive, growing problem to maintain and improve its crumbling, inadequate transportation infrastructure.

# Favorable Trends in Developed Countries

Fortunately, some favorable traffic mortality trends have been observed in the U.S. and in other developed countries over the past several decades. The 33,808 U.S. traffic fatalities in 2009 were the lowest annual number since 1950. Deaths and injuries per mile driven were down to historic lows of 1.13 deaths and 74 injuries per 100 million miles driven. See Figure 2 (next page).

The decreased fatalities are mainly due to advances in motor vehicle safety technology, new car safety regulations, changes in driver behavior and use of more highway safety features. A decade ago, 77% Fatalities and Fatality Rate per 100M VMT by Year



1950-1974: National Center for Health Statistics, HEW, and State Accident Summaries (Adjusted to 30-Day Traffic Deaths by NHTSA); FARS 1975-2008 (Final), 2009 Annual Report File (ARF); Vehicle Miles Traveled (VMT): Federal Highway Administration.

#### Figure 2

of vehicles sold had no side airbags. In 2009, nearly 65% of vehicles offered head and torso protecting side airbags as standard equipment. Also, the electronic stability control systems that use the car's brakes to reduce skids were only available on 9% of U.S.-sold vehicles in 1999. By 2009, 85% of vehicles sold offered electronic stability control technology as either standard equipment or an option.

More frequent use of protective features on highways is also reducing deaths and injuries. Such measures include rumble strips at the sides of roads, which alert inattentive drivers when they are drifting off the roadbed, median barriers that prevent vehicles from crossing divided highways, and the use of shockabsorbing barrels near roadside obstacles.

The single greatest reason for the reduction in U.S. traffic fatalities is increased seat belt use. The percentage of U.S. drivers and passengers using seat belts has risen steadily, from 58% in 1994 to 75% in 2002 to 84% in 2009.

As good as this trend of reduced U.S. traffic mortality may be, I believe it may have produced an unwarranted sense of complacency in this country when it comes to road safety. To confirm that greater rates of progress can be achieved, one need only compare U.S. traffic fatality trends with those in certain other countries. See Table 3.

Some reasons for these differences are other coun-

tries' higher rates of seat belt use, stricter drunk driving laws and greater availability of public transportation. If the U.S. had achieved similar degrees of improvement, about 10,000 fewer annual traffic deaths would occur. The World Health Organization (WHO) estimates total traffic fatalities in developed countries will decline 30% by the year 2020. totaling 14.2% of all traffic fatalities.

Motorcycle deaths per 100 million miles driven have jumped as well, from 21.78 in 1996 to 38.79 in 2006. The 2006 result represents a 34 times greater fatality rate for motorcyclists, mile-for-mile, to the fatality rate for occupants of all motor vehicles. It is worth noting that in 1975, 47 states had motorcycle helmet laws, and federal highway funding was tied to helmet laws. Foolishly, many states have since repealed those laws due to political pressures, thereby guaranteeing more deaths and injuries. As of December 2010, only 20 U.S. states still require motorcycle helmets for all riders, and just 22 states require some of their bicyclists (usually only children) to wear helmets.

**Motorcycle Mortality** 

U.S. motorcycle mor-

tality has distressingly

gone in the wrong di-

rection. In 1997, there

were 2,116 motorcycle

fatalities-only about

5% of total traffic fatalities. In 2008, only

11 years later, 5,290

motorcycle fatalities

were recorded-2.5 times as many and

# Growth of Cars and Fatalities in Developing Countries

The heavy toll of traffic fatalities is even more alarming when viewed on a global scale. Worldwide, approximately 1.2 million individuals are killed and 50 million injured each year from traffic accidents. WHO estimates that by 2020, total annual traffic deaths worldwide will balloon to 2 million, due to WHO's predicted 80% increase in developing countries' fatalities.

In 2009, the 13 million new cars sold in China exceeded U.S. new car sales for the first time. This vaulted China into the position of world's largest new car market. WHO estimates that more than 600 fatalities and 45,000 injuries occur daily on China's roads as a consequence of its explosive growth in car ownership.

	1979 Fatalities	2002 Fatalities	Percent Change
United States	51,093	42,815	-16.20%
Great Britain	6,352	3,431	-46.00%
Canada	5,863	2,936	-49.90%
Australia	3,508	1,715	-51.10%

Table 3

Country	Road Traffic Mortality	Country	Road Traffic Mortality	permit drivers to be fined for
El Salvador	41.7	Mexico	11.8	belts only if
Dominican Rep.	41.1	Ukraine	10.8	they have been
Brazil	25.6	Argentina	9,9	other reason-
Colombia	24.2	Denmark	9.5	not lack of seat
Venezuela	23.1	Australia	9.3	Far more driv
South Korea	21.9	Canada	9.1	ers wear seat
Thailand	21.0	Germany	8.8	primary law
Russia	19.4	Finland	7.7	states com-
China	19,0	Norway	7.7	ers in the 19
USA	15.0	Japan	7.4	states withou a primary sea belt law. Sea
Spain	13.7	Netherlands	6.7	
France	13.2	Sweden	5.7	Table 5.
Italy	12.1	United Kingdom	5.6	Engineering

better motor vehicles is an

Table 4 Annual Number of Traffic Deaths per 100,000 Inhabitants

Car sales are also growing rapidly in India, the world's second most populous country, where in 2008, 118,000 traffic deaths were recorded-up 40% from 5 years earlier. Expanding car sales are occurring in developing countries, where populations have little driving culture or experience. The cars are placed in a chaotic and dangerous mix of pedestrians, bicycles, scooters and various other types of transportation. Roads are inadequate, and safety laws and measures as well as safe driving techniques are often lacking.

Traffic fatality risk should also be considered in relation to foreign travel, since it is one of the biggest causes of deaths of U.S. and Canadian citizens while traveling abroad.

An international survey in 2002 revealed dramatic differences in traffic mortality from country to country. See Table 4.

# What Can Be Done?

Now that the extent and nature of traffic fatalities have been described, how can this destructive menace to society be reduced? The simplest and perhaps most obvious solution might be to increase seat belt use to as close to 100% as possible.

One way of doing so would be to have a national primary seat belt law. A primary seat belt law permits drivers to be stopped and fined by law enforcement for not wearing a seat belt. Secondary seat belt laws

ongoing process that could be accelerated by more research and wider use of proven safety features. The federal government has recommended the installation of rear view cameras in all new vehicles by 2014. The NHTSA estimates that 292 fatalities and 18,000 injuries, mainly to children and the elderly, occur each vear as a result of backover crashes. Rear-view cameras let motorists see what's behind them via a video display on the car's dashboard, and sound a bell or alarm to alert the driver of pedestrians or other vehicles within the camera's field of view.

Some cars now also offer warning systems for unintentional lane drift, forward collision danger and when other vehicles are in the driver's blind spot. Night vision systems available in certain luxury cars detect reflected infrared light to distinguish station-



Source: National Occupant Protection Use Survey, NHTSA's National Center for Statistics and Analysis, 2008, 2009

ary and moving objects after dark. A moving object, such as a pedestrian, is highlighted on the screen display which allows early driver reaction. Approximately 64% of pedestrian fatalities occur at night when pedestrians are more difficult to see. Another engineering improvement, stronger SUV roofs, would better protect SUV occupants involved in the disproportionately large number of rollover accidents associated with that class of vehicle.

Better maintained roads and bridges and improvements in highway design and capacity would also be greatly beneficial. China spends 7% of its gross domestic product on its infrastructure, India spends 5%, and the U.S. spends less than 2%. Road construction does not have to go to the lowest bidder, which is the usual U.S. practice. When autobahns are constructed in Germany, the goals of high quality and durability can take precedence over short-term cost.

One change in road design that is showing promise is the use of roundabouts, which provides efficient traffic flow and eliminates one of driving's most dangerous moves–left turn against oncoming traffic. The town of Carmel, Indiana, which has built 60 roundabouts since 2001, has experienced an 80% drop in crashes involving injuries.

More roads also need to be designed with safety provisions for bicycle riders and pedestrians. In addition, many motorcycle casualties could be prevented by making the use of full-head helmets mandatory nationally. And public transportation such as a rapid transit system tends to be safer than private motor vehicles. Greater availability of such systems in the U.S. would reduce congestion, pollution and traffic fatalities.

One statistic to give pause comes from the Missouri Highway Patrol, which reported that 58% of driver's license applicants in 2009 failed the written test. Such dismal results demonstrate the need for better driver instruction and training. One possible way to increase public awareness and knowledge might be to present a national driving test annually via television, radio, newspapers and the Internet.

By education and regulation, effective methods should be found and implemented for decreasing cell phone use and texting while driving. New devices that alert drivers of fatigue are undergoing trials. Alcoholimpaired driving can be reduced via stricter statutes and better enforcement of existing laws.

Wide discrepancies exist between localities regarding tolerance of drunk driving and its consequences. In 2009, drunk driving fatalities as a percentage of total traffic fatalities ranged from 16% to 48% among U.S. states. Some states are doing a much better job of controlling this problem than others. Compared to the U.S., Europe generally has harsher and more consistent penalties for drunk driving.

To deal with higher age-related traffic accident rates, some states require more frequent driver's license testing at older ages. The minimum legal driving age of 18 in effect in most European countries addresses the risks associated with younger-age drivers. In the U.S., in contrast, the minimum legal driving age is usually 16, and several states even license drivers as young as 14 or 15 years old. It would require a much longer article to cover numerous other worthy proposals for improved traffic safety.

Scientific and technological advances offer advantages, hope and new challenges. As a child I heard predictions that by the 21st century, we would all be routinely traveling in flying cars like those in the *Star Wars* movies. Therefore, I remain skeptical about how soon the self-driving cars now being tested will become reliable and practical. If self-driving cars could be perfected and made affordable, they would revolutionize transportation and potentially make traveling by motor vehicle far safer.

# Summary

Traffic fatalities and injuries continue to take a huge toll in the U.S. and a mounting toll worldwide. This serious threat to our well-being receives relatively little news media attention and public focus in relation to the magnitude of the problem. Much can be done to greatly reduce traffic mortality, but it is not being done. The know-how exists, but the allocated resources, determination and concentrated efforts are lacking to take on this challenge.

It is as much in the insurance industry's interest as it is in the public's interest to support and promote traffic safety improvements. Certain causes of death result in only slight increases in total mortality, yet some of these risks are so sensationalized that vast resources and news media coverage are expended on them. If only a fraction of such resources, news media reporting and public awareness was devoted to reducing traffic mortality, many thousands of lives could be saved each year and hundreds of thousands of injuries prevented.

#### References

National Highway Traffic Safety Administration, Traffic Safety Facts, August 2010 & Sept. 2009

The Insurance Institute for Highway Safety, Current U.S. motorcycle and bicycle helmet laws, Dec. 2010

American Society of Civil Engineers, Report Card for America's Infrastructure, 2009 Grades

- Virginia Tech Transportation Institute, Texting While Driving Study, July 2009
- World Health Organization, World Report on Road Traffic Mortality 2002
- New York Times, Driven to Distraction articles by Matt Richtel, July 2009
- The Telegraph, Night Vision for Cars, Nov. 17, 2009
- Newsweek, A Safer Route on the Roads in Indiana, Oct. 11, 2010 Wall Street Journal, Why Driving a Car Has Never Been Safer, Oct. 28, 2009, and Crashes Fuel Concerns Over Older Drivers, July 9, 2009

International Herald Tribune/New York Times, India's Highways of Death, June 9, 2010, and Priorities in India: First buy a car, then learn

to drive, Jan. 10, 2008 CBS News Series "Where America Stands," Sept. 3, 2010

*The Washington Post*, What Does It Take to Get Texting Off Roads? Oct.

5, 2009

Government Accountability Office, Older Driver Safety, April 2007 Harvard Center for Risk Analysis, Cell Phone Use While Driving – Risks and Benefits, July 2000

Transport Canada, Canadian Motor Vehicle Traffic Collision Statistics: 2005

MSNBC, Late inspections of bridges put travelers at risk, Jan. 30, 2008 CNN.com, Tagging teen drivers for their protection, July 31, 2009, and Safety council urges ban on cell phone use while driving, Jan. 13, 2009

Parade Magazine, How We Can Save Our Roads, March 8, 2009 Rockford Register Star, Slow down, save cash, avoid crash, Sept. 9, 2010 USA Today, Traffic accidents are top killer of U.S. travelers abroad, Oct. 21, 2010

21, 2019 Dispatch, U.S. pushing for cameras in all new cars by 2014, Dec. 4, 2010, and A little studying could move drivers along, Nov. 14, 2010

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